What Is Claimed Is:

1. A method of monitoring dielectric properties of a fluid, comprising the steps of:

providing a contact potential difference sensor;

flowing a fluid past the sensor to generate a contact potential; and

characterizing the contact potential as a measure of dielectric properties of the fluid.

2. The method as defined in Claim 1 wherein the fluid comprises an oil.

3. The method as defined in Claim 1 wherein the characterizing step includes measuring the contact potential of a standard fluid and comparing with the contact potential of a test fluid.

4. The method as defined in Claim 3 wherein the step of measuring the contact potential of a standard fluid includes establishing signatures associated with a particular dielectric state of the fluid.

5. The method as defined in Claim 4 wherein the dielectric state is selected from the group consisting of a molecular change relative to the standard fluid and presence of a contaminating material.

6. The method as defined in Claim 5 wherein the molecular change is selected from the group consisting of thermally induced chemical degeneration and chemical reaction with a contaminant.

7. The method as defined in Claim 1 wherein the fluid is selected from the group consisting of condensed matter and gaseous matter.

8. The method as defined in Claim 1 further including the step of outputting an alarm indication upon detecting dielectric properties outside an acceptable range.

9. The method as defined in Claim 8 further including a display for use by an operator to view the alarm indication.

10. A system for monitoring operational dielectric condition of a fluid, comprising:

a contact potential sensor;

a fluid disposed in a closed loop; and

an output device to indicate the operational condition of the fluid.

11. The system as defined in Claim 10 wherein the fluid comprises a hydrocarbon fluid.

12. The system as defined in Claim 11 wherein the hydrocarbon fluid comprises an oil.

13. The system as defined in Claim 10 wherein the output device comprises a machine maintenance indicator component.

14. The system as defined in Claim 10 further including a computer for analyzing the operational condition of the fluid.

15. The system as defined in Claim 10 wherein the computer includes data characteristic of a plurality of particular degraded operational conditions of the fluid.

16. The system as defined in Claim 15 wherein the data characteristic of particular degraded operational condition is selected from the group consisting of chemically changed fluid relative to a starting virgin fluid, fluid chemically reacted with an environmental material and contaminating extrinsic material.

17. The system as defined in Claim 10 further including an oil pan of an engine having a drain plug wherein the sensor is disposed near the drain plug.

18. The system as defined in Claim 10 further including a closed loop which contains the fluid, the closed loop part of an industrial unit.

19. The system as defined in Claim 18 wherein the industrial unit is selected from the group consisting of a chemical plant, an environmental apparatus, an internal combustion engine and a turbine.

20. The system as defined in Claim 10 further including data storage containing data sets characteristic of desired chemical states of a fluid, whereby data from a fluid under test can be compared with the desired chemical state data.